

A new aphaenopsoid genus of the tribe Trechini from the Caucasus

(Coleoptera, Carabidae)

by Igor A. BELOUSOV and Vadim Y. DOLZHANSKY

Abstract

Taniatrechus setosus, a new genus and species of highly specialized troglobiotic trechine carabids, is described from Abkhazia, western Caucasus. This aphaenopsoid species is similar in some characters of chaetotaxy to the Balkan genus *Pheggomisetes* Knirsch, but strongly differs from it in other characters. The new genus is assumed to be placed in the *Neotrechus* phyletic series near *Jeannelius* Kurnakov, *Kosswigia* Jeannel, and the *Nannotrechus* complex.

Introduction

The fauna of the Caucasus is rich in cave adapted carabids (BELOUSOV 1989; DOLZHANSKY & LJOVUSHKIN 1985, 1989, 1990; KURNAKOV 1959; LJOVUSHKIN 1970, 1972). In 1979, one of us (V. D.) was lucky enough to collect a single female of a further remarkable cave-dwelling trechine carabid that turned out to represent a very highly specialized troglobiotic genus new to science. In spite of painstaking efforts, no further specimens have since been found. That is why we have decided to describe this taxon based mainly on external features, some of them being highly characteristic of the new genus concerned.

Because of monotypy, it is difficult at the present to separate the generic and species diagnoses. So the species diagnosis largely concerns the proportions and colour.

We wish to express our most hearty thanks to Dr. Oleg L. KRYZHANOVSKY (St. Petersburg) for his attention to this work. Dr. Wolfgang SCHAWALLER (Stuttgart) helped with the publication of this paper.

Taniatrechus gen.n.

Type-species: *Taniatrechus setosus* sp.n. by monotypy.

Description: The most highly specialized troglobiotic trechine of an aphaenopsoid appearance known from the Caucasus. Large, apterous, depigmented. Extraordinarily narrow fore-body and comparatively large elytra with the maximum width far behind the middle, and entirely effaced humeri. Legs very slender and long. Body surface glabrous, even humeral margins of the elytra without pubescence.

Head enormously large, elongate and somewhat parallel-sided, strongly constricted behind temporae and there with a vaguely traceable but relatively deep transverse impression. Eyes completely absent. Frontal furrows subparallel, scarcely angulate, sharp and deep, almost complete, only in posteriormost part vague. Labrum comparatively narrow, without distinct emargination at anterior margin, latter bearing 8 setae of which lateral longest, and sublateral very small (fig. 5). Mandibles very slender and feebly curved, right one tridentate, both premolar and retinacle slightly projecting and removed proximally. Labial and maxillary palpi slender, penultimate segment of former straight and long, slightly dilated just at apex. Labium (fig. 7) separated from submentum by a distinct and sinuate suture. Mental tooth completely missing. Submentum bearing 8 setae (including subangular ones) arranged in an arcuated row, and one more pair of setae posteriorly. In front of median pair of submental setae, 2 small, asymmetrical,

scarcely distinguishable setae (fig. 7). Pharynx strongly and roughly rugose. Clypeus with 3 setae on each side arranged in an arc, sublateral setae being anteriormost (fig. 5). Temporae with numerous long setae arranged mainly in 2 subparallel rows, the supraorbital one along the exterior side of frontal furrows, and the other along low surface of genae. In addition, a few more, irregular setae on temporae and underside of head.

Pronotum very long and parallel-sided, much longer than wide, its sides partly visible in dorsal view. Margins of pronotum strongly reflexed upwards but comparatively narrow. Basal transverse impression very close to base of pronotum, suture-shaped. Anterior lateral pore far from anterior margin, posterior pore distinctly removed forward, with lateral margin there lacking a distinct denticle.

Elytra moderately convex, with completely effaced humeri, broadest far behind middle at apical quarter, strongly impressed near scutellum. Marginal gutter as in pronotum, comparatively narrow but strongly reflexed upward, margins adenticulate but scarcely and irregularly sinuate at middle. Elytral striation extraordinarily reduced, only first stria partly well-impressed. Apical striola short and curved, apical carina feebly salient. Three discal pores of elytra. Standard number of setae in umbilicate series. First pore of latter markedly distant from margin gutter, i.e. humeral group of umbilicate series not aggregated. 5th pore of umbilicate series much more strongly removed from 4th than from 6th (fig. 1).

Legs very long and slender but pro- and mesotarsi relatively short. Protibiae pubescent on their external surface and not distinctly grooved. Pro- and mesotarsi modified as in *Aphaenops*, their 4th segment with a ventral process provided with a hyaline appendage (figs 2-4).

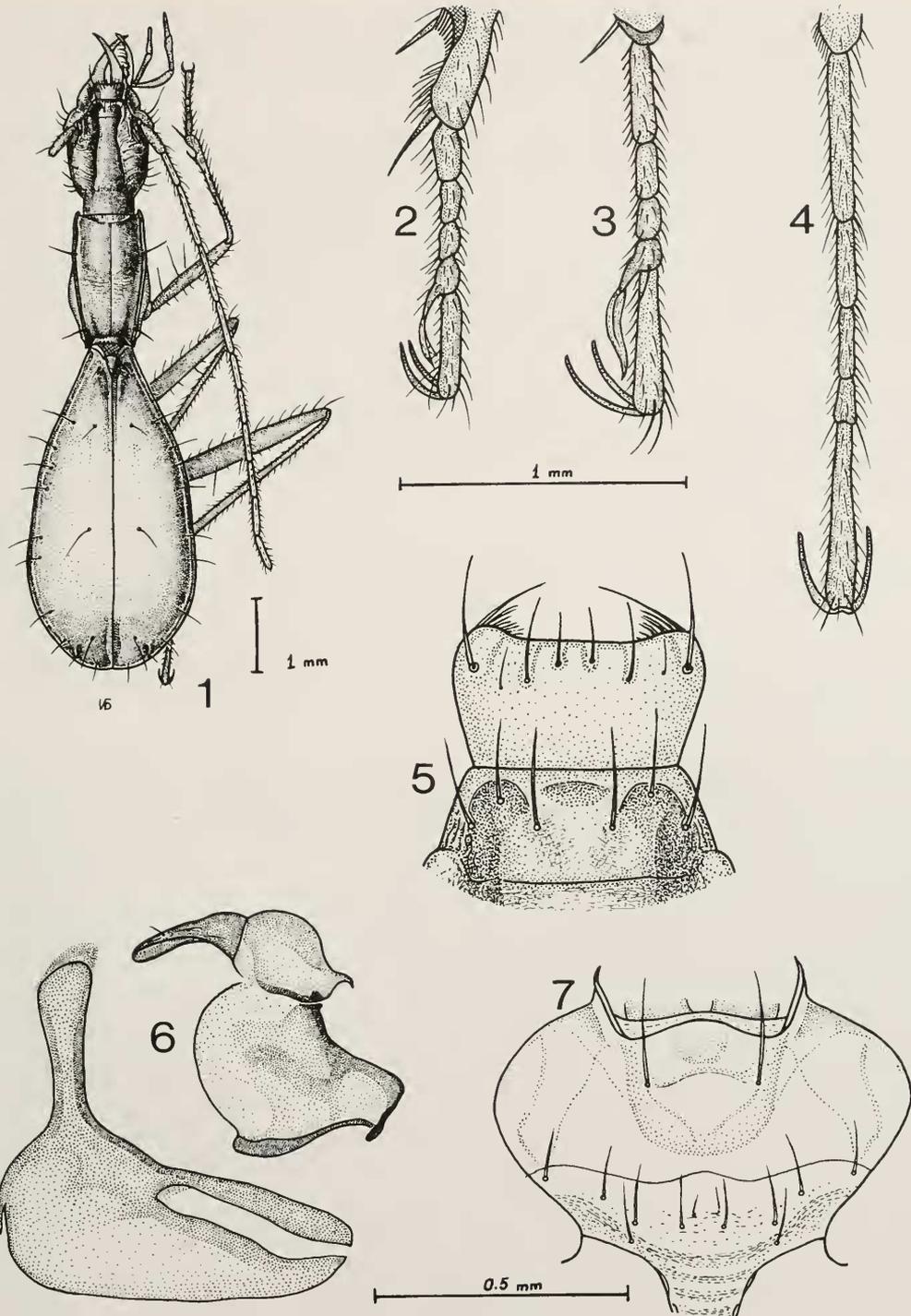
Discussion: For the general feature the new genus is very similar to such most specialized troglobiotic genera as *Aphaenops* BONVOULOIR, *Trichaphaenops* JEANNEL and others, as well as to certain highly specialized species of some usually endogean or hypogean genera, e.g. *Anophthalmus* STURM. Lacking male specimens, to establish both the morphology of the aedeagus and the number of dilated segments in fore tarsi, its systematic position is very difficult to evaluate at the present. Nevertheless, its generic independence is doubtless. Such a remarkable character as numerous temporal setae brings it closer to *Pheggomisetes* Knirsch from the Balkans. Their close relations are reinforced by a similar number (over 6) of submental setae in both genera involved. However, the new genus is easily distinguishable from its Balkan counterpart by 3 discal pores on the elytra (versus 6-8 setae associated with interspace 3, and one more seta associated with interspace 5 in *Pheggomisetes*), the almost complete frontal furrows, a different shape of the head and pronotum (i.e., the absence of a strong neck constriction very characteristic of *Pheggomisetes*, the extremely oblonged, parallel-sided pronotum in the new genus), not aggregated condition of the first pore of the umbilicate series, etc. The above external similarity of *Taniatrechus* n.gen. with *Aphaenops* (including the presence of hyaline appendages on the 4th pro- and mesotarsomere) seems to be due to the similar mode of life, reflecting no special phylogenetical relations between them. This viewpoint is supported by an important difference in the number of submental setae (6-7 in *Aphaenops*), the well distinguishable labial suture of *Taniatrechus* n.gen., striking discrepancy in head chaetotaxy (only 2-3 pairs of supraorbital setae in *Aphaenops*), and usually more strongly shortened frontal furrows in *Aphaenops*.

An increased number of submental setae implies a comparison of the new genus with the genera of the *Trechoblemus* complex. From all the known genera of this complex, the new genus is easily separated by the glabrous body surface and striking aphaenopsoid habitus.

Two out of three aphaenopsoid genera currently known from the Caucasus, *Meganophthalmus* KURNAKOV and *Jeannelius* KURNAKOV, deserve special attention as counterparts of *Taniatrechus* gen.n. From both, *Taniatrechus* gen.n. is easily distinguishable by numerous supraorbital setae, entirely effaced humeri and almost completely obliterated striae on the elytra as well as in a quite different body shape. The degree of non-aggregation of the humeral group of umbilicate series is the same as in *Meganophthalmus* and is somewhat more pronounced than in *Jeannelius*. In addition, the new genus differs from *Jeannelius* by almost complete frontal furrows. It is noteworthy that both *Meganophthalmus* and *Jeannelius* have also similarly modified 4th segments of the pro- and mesotarsi, although the process supporting a hyaline appendage is not so strongly developed as in *Taniatrechus* gen.n. (in *Jeannelius* the process is distinguishable but the hyaline appendage is well-developed).

Certainly belonging to the *Duvalius* phyletic series, the third Caucasian troglobiotic genus *Inotrechus* DOLZHANSKY & LJOVUSHKIN differs from *Taniatrechus* gen.n. by 2 supraorbital setae, the aggregated humeral group of the umbilicate series, well-developed striae on the elytra, etc.

Finally, certain resemblance of the new genus with some representatives of the *Nannotrechus* complex is to be noted. The only known troglobiotic genus of the complex in question possessing both a non-



Figs 1-7: *Tamiatrechus setosus* gen.n., sp.n., holotype female. - 1. habitus; 2. protarsus; 3. mesotarsus; 4. metatarsus; 5. labrum and clypeus; 6. genitalia; 7. labium and submentum.

aggregate humeral group of the umbilicate series and pubescent, non-grooved protibiae is *Kosswigia* JEANNEL (JEANNEL 1947, CASALE & LANEYRIE 1982). This monotypical aphaenopoid genus (with a ventral process of the 4th tarsomere also present) described from Anatolia is easily distinguishable from *Taniatrechus* gen.n. by 2 supraorbital setae, 6 submental setae, the labium fused with the submentum, very long mental tooth, and some minor details.

As far as Caucasian representatives of the above complex are concerned, all hitherto known species are endogean, thus strikingly differing in their habitus from the new genus. Besides, they possess an aggregated condition of the humerals group of the umbilicate series, with the only known exception of *Cimmerites nakeralae* REITTER (according to JEANNEL 1960). Nevertheless, such features as an increased number of submental setae, glabrous body surface, hind lateral pore of pronotum markedly removed forward and, especially, the presence of additional setae on the head, bring *Taniatrechus* gen.n. closer to the *Nannotrechus* complex. But one should take account of the fact that all the above characters usually appear independently from each other in different species of the complex concerned. However, this evidence shows evolutionary trends in the group in question, being noteworthy.

Summarizing all data, it seems more justified to place *Taniatrechus* gen.n. in the *Neotrechus* phyletic series (sensu JEANNEL 1928-30, 1947, 1960; CASALE & LANEYRIE 1982) close to the *Nannotrechus* complex, on the one hand, and to *Kosswigia* and *Jeanuelius*, on the other. Yet the true systematic position can be ultimately ascertained only when males become available for study, in particular the structure of the protarsi and aedeagus.

Taniatrechus setosus sp.n.
(figs 1-7)

Holotype (female): Caucasus, Abkhazia, Bzyb'sky Mt. Range, Mt. Khipsta, Cave Souvenir, depth 150 m, 2.VIII.1979 leg. V. DOLZHANSKY (coll. DOLZHANSKY, later in Zoological Institute of the Russian Academy of Sciences, St. Petersburg).

Description: Body length from anterior margin of labrum to apex of elytra 8.0 mm. Reddish-testaceous with markedly paler, translucent elytra, appendages monochromously yellowish. Head very large, 1.10× as wide as pronotum. Temporae convex and subparallel at middle. Head with 7-10 supraorbital setae and 3-4 setae in every row on genae; a few setae on temporae and underside of head. Antennae very long, considerably surpassing posterior discal pore level of elytra, their scape as long as antennomere 2 and 2.6× as long as wide; antennomere 3 about 6.3× as long as wide and scarcely longer than 4th; ultimate antennomere as long as penultimate one and a little over 3× as long as wide. Pronotum extraordinarily long and parallel-sided, 1.75× as long as wide, its base straight, 1.45× as narrow as pronotal maximum width and 1.14× as narrow as frontal margin. Posterior angles of pronotum small and acute, anterior angles strongly protruding forward. Basal transverse impression deep and sharp, situated closely to base. Disk of pronotum flat, only in anterior half longitudinally convex. Elytra moderately convex, their sides divergent posteriorly, broadest at apical third, 1.71× longer than wide (measured from apex of scutellum to apex of elytra), 2.29× as long as pronotum and 2.13× as wide as head. Basal border of elytra completely obliterated. First stria traceable anteriorly and near apex of elytra (fig. 1), other striae on elytra entirely effaced, only a few slight, scarcely distinguishable ribs. Scutellar pore present, suture strongly impressed near scutellum. Apical striola short and curved anteriorly. Normal number of pores in umbilicate series. First pore of humeral group of umbilicate series markedly distant from margin gutter, i.e. not aggregated. Median group distinctly removed from humeral one. Anterior discal pore somewhat more distant from base of elytra than first pore of umbilicate series, posterior discal pores before anterior pores of median group. Discal formula 15-51-90 (sensu PAWLOWSKI 1979, but including apical discal pore). Microsculpture on head isodiametric, well-impressed, on dorsal side of pronotum forming superficial transverse meshes, on elytra distinct, consisting of comparatively high meshes. Female genitalia as in fig. 6; chaetotaxie very poor, only one dorsal pore on stylus distinguishable. Aedeagus unknown.

Literature

- BELOUSOV, I. 1989: New carabids of the tribe Trechini (Coleoptera, Carabidae) from the Caucasus. II. New species of the genera *Duvalius* Delar. and *Nannotrechus* Winkl. and a review of the *grandiceps* and *caucasicus* groups of the genus *Trechus* Clairv. - Rev. Ent. URSS **68**, 136-152 (in Russian).
- CASALE, A., LANEYRIE, R. 1982: Trechodinae and Trechinae du monde, tableau des sous-familles, tribus, series phyletiques, genres, et catalogue general des espèces. - Mém. biospeol. **9**, 1-226.
- DOLZHANSKY, V., LJOVUSHKIN, S. 1985: New species of the Trechini (Coleoptera, Carabidae) from caves of Georgia. - Zool. Zhurn. **64**, 48-52 (in Russian).
- DOLZHANSKY, V., LJOVUSHKIN, S. 1989: A new genus of Trechini (Coleoptera, Carabidae) from caves of western Georgia. - Zool. Zhurn. **68**, 144-148 (in Russian).
- DOLZHANSKY, V., LJOVUSHKIN, S. 1990: A new species of cave-dwelling ground beetles (Coleoptera, Carabidae, Trechini) from Georgia. - Zool. Zhurn. **69**, 145-148 (in Russian).
- JEANNEL, R. 1928-30: Monographie des Trechinae. Morphologie comparée et distribution géographique d'un group de Coléoptères. - L'Abeille **34**, 59-122, **35**, 1-808.
- JEANNEL, R. 1947: Coléoptères cavernicoles de l'Anatolie recueillis par M. C. Kosswig. - Rev. Fac. sci. Univ. Istanbul (B) **12**, 1-10.
- JEANNEL, R. 1960: Revision des Trechini du Caucase (Coleoptera, Trechidae). - Mém. Mus. natn. Hist. nat. Paris (A) **17**, 155-216.
- KURNAKOV, V. 1959: Les Trechini de la faune souterraine de l'Abkhazie. - Rev. franc. Ent. **26**, 231-236.
- LJOVUSHKIN, S. 1970: New forms of Trechini (Coleoptera) from caves of the West Transcaucasus. - Zool. Zhurn. **49**, 1656-1662 (in Russian).
- LJOVUSHKIN, S. 1972: Biospeologica sovietica. XLIX. Le premier représentant anophthalme des Trechini (Coléoptères Carabiques) de la Ciscaucasie. - Int. J. Speleol. **4**, 357-364.
- PAWLOWSKI, J. 1979: Revision du genre *Trechus* Clairv. (Coleoptera, Carabidae) du Proche Orient. - Acta Zool. cracov. **23**, 247-474.

Authors' address:

I. BELOUSOV
prospekt Narodnogo Opol'tsheniya 41
Apt. 25
St. Petersburg, Russia 198216.

V. DOLZHANSKY
prospekt Mira 89
Apt. 109
Moscow, Russia 129085.